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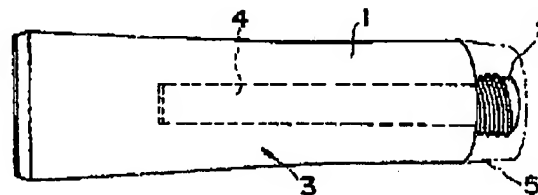
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(54)【考案の名称】 プラスチックチューブ容器

(57)【要約】

【目的】 内容物が適正な温度になったことを確実に知ることができるプラスチックチューブ容器を提供することを目的とする。

【構成】 少なくとも一部が透明部に形成されたプラスチックチューブ3と、このプラスチックチューブ3内に配設された適温表示体4とが備えられており、この適温表示体4の少なくとも一部が感温変色領域に形成されている。



3: プラスチックチューブ 4: 適温表示体

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【実用新案登録請求の範囲】

【請求項1】 少なくとも一部が透明部に形成されたプラスチックチューブと、そのチューブ内に配設された適温表示体を備え、上記適温表示体の少なくとも一部が感温変色領域に形成されていることを特徴とするプラスチックチューブ容器。

【図面の簡単な説明】

【図1】 この考案のプラスチックチューブ容器の一実施例を示す説明図である。

【図2】 上記プラスチックチューブ容器の要部の断面図である。

【図3】 上記プラスチックチューブ容器の製造工程の説明図である。

【図4】 適温表示体が一体形成されている首部の斜視図である。

【図5】 上記プラスチックチューブ容器の製造工程の説明図である。

\* 【図6】 プラスチックチューブを上から見た状態を示す説明図である。

【図7】 上記プラスチックチューブ容器の製造工程の説明図である。

【図8】 上記プラスチックチューブ容器の製造工程の説明図である。

【図9】 この考案の他の実施例を示す説明図である。

【図10】 上記他の実施例の要部の断面図である。

【図11】 この考案のさらに他の実施例を示す説明図である。

【図12】 従来例を示す説明図である。

【符号の説明】

1 筒状体

2 首部

3 プラスチックチューブ

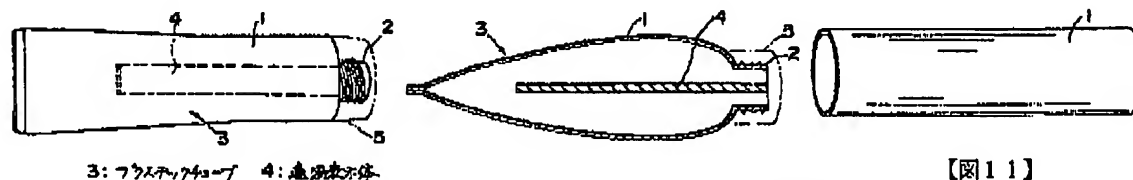
4 適温表示体

\*

【図1】

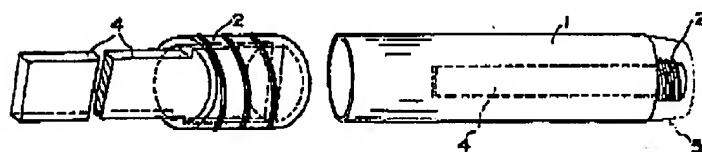
【図2】

【図3】



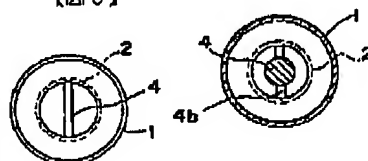
【図4】

【図5】



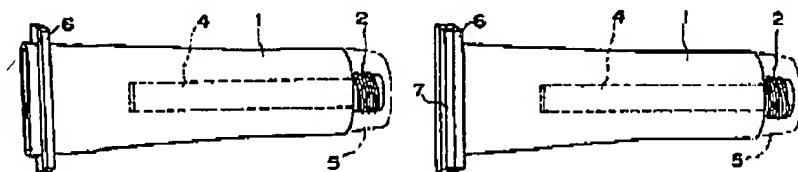
【図6】

【図11】

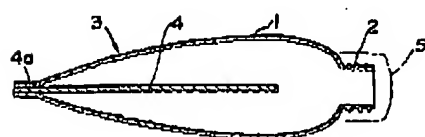


【図7】

【図8】



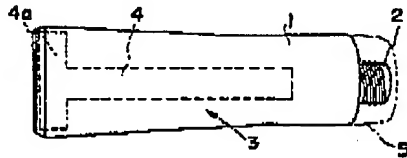
【図10】



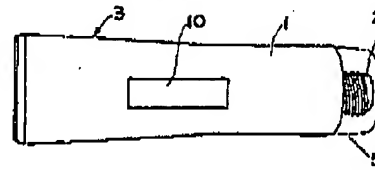
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【圖9】



【圖12】



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## 【考案の詳細な説明】

【0001】

## 【産業上の利用分野】

この考案は、ホットトリートメント剤、脱毛ワックス剤等、加温して使用する化粧料を収容するプラスチックチューブ容器に関するものである。

【0002】

## 【従来の技術】

一般に、プラスチックチューブ容器は、一端開口に首部が設けられ他端開口が閉塞されているプラスチックチューブを備えている。このようなプラスチックチューブ容器には、そのプラスチックチューブ内にホットトリートメント剤、脱毛ワックス剤等の化粧料を収容したものがあり、使用に際しては、プラスチックチューブ容器を温水等に漬けて加温し、これにより、内部の化粧料を適正な温度にしてから外部に押し出して使用することが行われている。

【0003】

## 【考案が解決しようとする課題】

ところが、上記のようにプラスチックチューブ容器を温水等に漬けて加温する場合には、温水の温度や加温時間等によって内部の化粧料の加温がまちまちなり、しかも、内部の化粧料が適正な温度になったかどうかを外部から知ることができないため、内部の化粧料を適正な温度にして使用することが難しいという問題がある。このため、図12に示すように、プラスチックチューブ3の外表面に、感温変色性インキによる印刷が施された表示ラベル10を貼付したものが提案され、一部で使用されている。この場合には、使用に際し、プラスチックチューブ容器を温水に漬ける等して加温し、上記表示ラベル10の印刷が変色すると、内部の化粧料が適正な温度になったものとして使用することが行われている。図において、1は筒状体、2は首部、5は上記首部2に冠着されるキャップである。しかしながら、通常、プラスチックチューブ容器では、プラスチックチューブ3の外表面の温度と内部の化粧料の温度とが異なることから、プラスチックチューブ3の外表面に貼付した表示ラベル10では正確に内部の化粧料の温度を知ることができない。このため、上記表示ラベル10の印刷の変色時点で化粧料を使

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用しても化粧料が適正な温度になっておらず、適正な温度にして使用することが難しいという問題が依然として残っている。

**【0004】**

この考案は、このような事情に鑑みなされたもので、化粧料等の内容物が適正な温度になったことを正確に知ることのできるプラスチックチューブ容器の提供をその目的とする。

**【0005】****【課題を解決するための手段】**

上記の目的を達成するため、この考案のプラスチックチューブ容器は、少なくとも一部が透明部に形成されたプラスチックチューブと、そのチューブ内に配設された適温表示体を備え、上記適温表示体の少なくとも一部が感温変色領域に形成されているという構成をとる。

**【0006】****【作用】**

すなわち、この考案のプラスチックチューブ容器は、少なくとも一部が透明部に形成されたプラスチックチューブの内部に、少なくとも一部が感温変色領域に形成された適温表示体を配設している。このため、化粧料等の内容物の使用に際し、プラスチックチューブ容器を加温し内容物が適正な温度になると、上記適温表示体の感温変色領域が常温時とは異なる色調に変化し、この色調の変化をプラスチックチューブ容器の透明部を介して外部から見て上記内容物が適正な温度になったことを知ることできるようになる。しかも、上記適温表示体は直接に内容物に接触しているため、上記適正な温度になったことを正確に知ることができ、上記感温変色領域の色調の変化時点が化粧料が適正な温度になった時点と合致するようになる。

**【0007】**

つぎに、この考案を詳しく説明する。

**【0008】**

この考案のプラスチックチューブ容器は、少なくとも一部が透明部に形成されたプラスチックチューブと、そのチューブ内に配設された適温表示体とを備えて

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いる。

**【0009】**

上記プラスチックチューブは、筒状体の一端開口に首部が形成され、他端開口が内周面を合わせた状態でヒートシールにより閉塞されて構成されている。上記プラスチックチューブの材料としては、可撓性を有するプラスチック材が用いられ、具体的には低密度ポリエチレン、硬密度ポリエチレン等があげられる。上記プラスチックチューブの一部に透明部を形成する方法としては、筒状体を透明なプラスチック材を用いて形成することにより筒状体の全体を透明に形成する方法、筒状体の一部に孔をあけこの孔を透明なプラスチック材で液密にカバーする方法等があげられる。

**【0010】**

また、上記プラスチックチューブ内に配設される適温表示体としては、上記と同様の可撓性を有するプラスチック材等が用いられる。

**【0011】**

上記適温表示体の少なくとも一部には感温変色領域が形成される。この感温変色領域は、熱変色性インキを用いて形成される。この熱変色性インキとしては、加温により所定温度に達することにより、内容物（例えば、ホットトリートメント剤、脱毛ワックス材等の化粧品）とのコントラストが鮮明に顕出する色で、常温で消失する熱変色性インキ、特に可逆性の熱変色性インキが用いられる。このような熱変色性インキは、従来公知品をそのまま使用することができる。例えば、 $\text{AgHgI}$ 、 $\text{Cu}_2\text{HgI}_4$ 、 $\text{HgI}_2$ 等の金属錯塩類であり、高温になると変色する熱変色性色素を含有するものや、電子供与性呈色性化合物（色を決定）と電子受容性化合物（濃度を決定）と有極性有機化合物（変色温度を決定）の3つの成分からなるメタモカラー（パイロットインキ社製）、クロミックカラー（松井色素化学工業社製）、ダイサーモ（大日精化工業社製）等があげられる。なお、上記可逆性の熱変色性インキとは、常温で無色あるいは有色で、所定温度に加熱することにより色が顕出あるいは変色し、再び常温に戻るとその色が消失あるいは変色するインキのことである。

**【0012】**

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上記適温表示体に感温変色領域を形成する方法としては、熱変色性インキを練り込んだ樹脂を用いて首部をインジェクション成形により成形する際に適温表示体の形成を同時に行うことにより適温表示体の全体に感温変色領域を形成する方法、熱変色性インキを練り込んだ樹脂を用い適温表示体を形成することによりその全体に感温変色領域を形成する方法、適温表示体の全部もしくは一部に感温変色性インキを印刷する方法等があげられる。

## 【0013】

上記適温表示体をプラスチックチューブ内に固定する方法としては、首部に適温表示体を一体成形したものを用意し、この首部を筒状体に熱接着する方法、適温表示体を首部に接着剤を用いて接着する方法、プラスチックチューブの上端開口をヒートシールするとき、この上端開口の内周面間に適温表示体を挟んでヒートシールを行う方法等があげられる。

## 【0014】

つぎに、実施例について説明する。

## 【0015】

図1はこの考案のプラスチックチューブ容器の一実施例を示している。このプラスチックチューブ容器のプラスチックチューブ3は、透明な低密度ポリエチレンからなる筒状体1の下端開口に首部2を形成し、上端開口を内周面を合わせた状態でヒートシールすることにより閉塞して構成されている。そして、上記首部2には適温表示体4が一体形成され、これにより、図2に示すように、上記プラスチックチューブ3内に無色の適温表示体4が配設されている。

## 【0016】

上記プラスチックチューブ容器は、例えば、つぎのようにして製造される。すなわち、まず、熔融温度が110℃で透明な低密度ポリエチレンを用い、図3に示すように、筒状体1を押出成形する。一方、熱変色性インキ（松井色素化学工業社製 クロミックカラー45、熱変色温度40℃）を練り込んだ樹脂を用い、図4に示すように、インジェクション成形により首部2と板状の適温表示体4と一体に成形する。そして、図5および図5を上から見た図である図6に示すように、上記筒状体1の下端開口に上記首部2を熱接着し、この首部2にキャップ5

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を冠着してその開口を閉塞する。そののち、筒状体1の上端開口から内部にホットトリートメント剤等の化粧料を充填する。この状態で、図7に示すように、筒状体1の上端開口の内周面を合わせて固定板6を取り付け、筒状体1の上端を450～550℃に加熱されたニクロムヒーターで140℃に加熱して溶融させる。そして、図8に示すように、圧着板7を取り付けて上端開口を圧着させた後、固定板6、圧着板7を取り外すことにより図1に示すプラスチックチューブ容器が製造される。

## 【0017】

このようにして得られたプラスチックチューブ容器を使用する際には、このプラスチックチューブ容器を温水に漬けて加温し内部の化粧料を加温する。この加温により、上記化粧料の温度が使用に最適な温度（略40℃）になると、適温表示体4が青色からピンク色に変色し、この変色を見て透明な筒状体1を通して上記化粧料が適正な温度になったことがわかり、化粧料を外部に押し出して使用する。

## 【0018】

このように、このプラスチックチューブ容器では、プラスチックチューブ3内の化粧料が適正な温度になったことが上記適温表示体4の変色により外部から判り、しかも、上記適温表示体4は直接に化粧料に接触しているため、その変色する温度が上記適正な温度と合致するようになる。

## 【0019】

図9および図10はこの考案の他の実施例を示している。この実施例では、適温表示体4はT字状に形成されており、このT字の横片4aをプラスチックチューブ3のヒートシール部に取り付けるようにしている。

## 【0020】

図11はこの考案のさらに他の実施例を示している。この実施例では、適温表示体4は円柱状に形成されている。図において、4bは支持片であり、首部2の内周面から中心に向いて延びており、これら両支持片4aの先端部に上記円柱状の適温表示体4を固着している。

## 【0021】



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なお、図1のプラスチックチューブ容器に用いられる適温表示体4の上端部をプラスチックチューブ3のヒートシール部に固定し、適温表示体4を両持ち状に強固に支持するようにすることが考えられる。

**【0022】****【考案の効果】**

以上のように、この考案のプラスチックチューブ容器によれば、化粧品等の内容物の使用に際し、プラスチックチューブ容器を加熱し内容物が適正な温度になると、上記適温表示体の感温変色領域が常温時とは異なる色調に変化し、この色調の変化をプラスチックチューブ容器の透明部を介して外部から見て上記内容物が適正な温度になったことを知ることができるようになる。しかも、上記適温表示体は直接に内容物に接触しているため、上記適正な温度になったことを正確に知ることができ、上記感温変色領域の色調の変化時点が化粧品が適正な温度になった時点と合致するようになる。

[JP,05-077038,U]

## CLAIMS

[The scope of a claim for utility model registration]

[Claim 1] A plastic tube container, wherein at least a part is provided with an optimal temperature display body allocated in a plastic tube formed in area pellucida, and its tube and at least a part of above-mentioned optimal temperature display body is formed in a thermal-sensing discoloration field.

## DETAILED DESCRIPTION

[Detailed explanation of the device]

[0001]

[Industrial Application]

This device is related with the plastic tube container which accommodates the cosmetics which use for a hot treatment agent and depilation waxing compound etc. warming.

[0002]

[Description of the Prior Art]

Generally, the plastic tube container is provided with the plastic tube in which a neck is provided in a one end opening, and the other end opening is blockaded. There are some which accommodated cosmetics, such as a hot treatment agent and depilation waxing compound, in the plastic tube in such a plastic tube container, and use is faced. After soaking a plastic tube container in warm water etc., warming it and making internal cosmetics into a proper temperature by this, extruding and using it outside is performed.

[0003]

[Problem(s) to be Solved by the Device]

However, in soaking a plastic tube container in warm water etc. and warming it as mentioned above. the temperature of warm water, and warming -- since it cannot be known from the outside whether warming of internal cosmetics became various and internal cosmetics moreover became a proper temperature by time etc., there is a problem that it is difficult to use internal cosmetics, making them into a proper temperature. For this reason, as shown in drawing 12, what stuck the display label 10 in which printing in temperature-sensing-and-color-changing-property ink was performed is proposed, and it is partly used for the outside surface of the plastic tube 3. In this case, if a plastic tube container is soaked in warm water, and is warmed when using it and printing of the above-mentioned display label 10 discolors, it is performed that internal cosmetics use it as what became a proper temperature. In a figure, it is the cap which a neck puts 1 on a tube-like object, and 2 is put on it, and is put on the above-mentioned neck 2 5. However, since the temperature of the outside surface of the plastic tube 3 differs from the temperature of internal cosmetics in a plastic tube container, with the display label 10 stuck on the outside surface of the plastic tube 3, temperature of internal cosmetics cannot usually be known correctly. For this reason, it was at the discoloration time of printing of the above-mentioned display label 10, even if it used cosmetics, cosmetics did not become a proper temperature, but the problem that it is difficult to use it for a proper temperature, carrying out still remains.

[0004]

This device sets off of a plastic tube container which can know correctly that it was made in view of such a situation, and contents, such as cosmetics, became a proper temperature as that purpose.

[0005]

[Means for Solving the Problem]

In order to attain the above-mentioned purpose, a plastic tube container of this device is provided with an optimal temperature display body by which at least a part was allocated in a plastic tube formed in area pellucida, and its tube, and takes composition that at least a part of above-mentioned optimal temperature display body is formed in a thermal-sensing discoloration field.

[0006]

[Function]

That is, the plastic tube container of this device is allocating the optimal temperature display body by which at least the part was formed in the thermal-sensing discoloration field in the inside of the plastic tube in which at least the part was formed in the area pellucida. For this reason, if a plastic tube container is warmed and contents become a proper temperature when using contents, such as cosmetics, it gets to know that the thermal-sensing discoloration field of the above-mentioned optimal temperature display body changed to a different color tone from the time of ordinary temperature, looked at change of this color tone from the outside via the area pellucida of a plastic tube container, and the above-mentioned contents became a proper temperature -- it comes to be able to carry out things since [ and ] the above-mentioned optimal temperature display body touches contents directly -- the above -- it can know having become a proper temperature correctly and comes to agree with the time of the change time of the color tone of the above-mentioned thermal-sensing discoloration field becoming temperature with proper cosmetics.

[0007]

Below, this device is explained in detail.

[0008]

The plastic tube container of this device is provided with the plastic tube in which at least the part was formed in the area pellucida, and the optimal temperature display body allocated in that tube.

[0009]

A neck is formed in the one end opening of a tube-like object, it is blockaded with heat sealing and the above-mentioned plastic tube is constituted, after the other end opening has doubled inner skin. The plastic material which has flexibility is used as a material of the above-mentioned plastic tube, and low density polyethylene, \*\*\*\*\* polyethylene, etc. are specifically raised. opening a hole in some of methods of forming the whole tube-like object transparently by forming a tube-like object in some above-mentioned plastic tubes, using a transparent plastic material as a method of forming the area pellucida, and tube-like objects -- this hole -- a transparent plastic material -- liquid -- the method of covering densely, etc. are raised.

[0010]

The plastic material etc. which have the same flexibility as the above as an optimal temperature display body allocated in the above-mentioned plastic tube are used.

[0011]

A thermal-sensing discoloration field is formed in at least a part of above-mentioned optimal temperature display body. This thermal-sensing discoloration field is formed using thermochromism ink. As this thermochromism ink, by reaching prescribed temperature by

warming, it is a color in which contrast with contents (for example, cosmetics, such as hot treatment agent and depilation wax material) carries out the phanerosis vividly, and the thermochromism ink which disappears at ordinary temperature, especially reversible thermochromism ink are used. A publicly known article can be conventionally used for such thermochromism ink as it is. For example, the thing containing the thermochromism coloring matter which is metallic complexes, such as  $\text{AgHgI}$ ,  $\text{Cu}_2\text{HgI}_4$ , and  $\text{HgI}_2$ , and will be discolored if it becomes an elevated temperature and an electron-donating coloring compound (a color is determined)

The meta-Mocha Ra (made by pilot ink company), chromic color (made by Matsui coloring matter chemical industry company), and die thermostat (made by Dainichiseika Colour & Chemicals Mfg. Co., Ltd.) etc. which consist of three ingredients of an electronic receptiveness compound (concentration is determined) and an owner polarity organic compound (discoloring temperature is determined) are raised. The above-mentioned reversible thermochromism ink is colorlessness or colored at ordinary temperature, and a color is the phanerosis or a thing of ink which the color will disappear or discolor if it discolors and returns to ordinary temperature again by heating to prescribed temperature.

[0012]

As a method of forming a thermal-sensing discoloration field in the above-mentioned optimal temperature display body, How to form a thermal-sensing discoloration field in the whole optimal temperature display body by forming an optimal temperature display body simultaneously, when fabricating a neck by an injection molding using the resin which scoured thermochromism ink, All or the method of printing temperature-sensing-and-color-changing-property ink in part of the method of forming a thermal-sensing discoloration field in the whole and optimal temperature display bodies, etc. is raised by forming an optimal temperature display body using the resin which scoured thermochromism ink.

[0013]

As a method of fixing the above-mentioned optimal temperature display body in a plastic tube, When preparing what carried out integral moulding of the optimal temperature display body to the neck and heat sealing the method of carrying out heat adhesion of this neck at a tube-like object, the method of using adhesives for a neck and pasting up an optimal temperature display body on it, and the upper bed opening of a plastic tube, The method of besides heat sealing on both sides of an optimal temperature display body between the inner skin of an end opening, etc. are raised.

[0014]

Below, an example is described.

[0015]

Drawing 1 shows one example of the plastic tube container of this device. The plastic tube 3 of this plastic tube container forms the neck 2 in the lower end opening part of the tube-like object 1 which consists of transparent low density polyethylene, and is blockaded and constituted by heat sealing an upper bed opening, where inner skin is doubled. And the optimal temperature display body 4 is really formed in the above-mentioned neck 2, and thereby, as shown in drawing 2, the colorless optimal temperature display body 4 is allocated in the above-mentioned plastic tube 3.

[0016]

The above-mentioned plastic tube container is manufactured as follows, for example. That is, as melting temperature shows drawing 3 first using transparent low density polyethylene at 110 \*\*, extrusion molding of the tube-like object 1 is carried out. On the other hand, using the resin

which scoured thermochromism ink (the chromic color 45 by a Matsui coloring matter chemical industry company, the heat fading temperature of 40 \*\*), as shown in drawing 4, it fabricates to the neck 2, the tabular optimal temperature display body 4, and one by an injection molding. And as drawing 5 and drawing 5 are shown in drawing 6 which is the figure seen from the top, heat adhesion of the above-mentioned neck 2 is carried out at the lower end opening part of the above-mentioned tube-like object 1, the cap 5 is put on this neck 2, and that opening is blockaded. An inside is filled up with cosmetics, such as a hot treatment agent, from the upper bed opening of the tube-like object 1 after it. In this state, as shown in drawing 7, the inner skin of the upper bed opening of the tube-like object 1 is doubled, the stationary plate 6 is attached, and melting of the upper bed of the tube-like object 1 is heated and carried out to 140 \*\* with the nichrome heater heated by 450-550 \*\*. And after attaching the contact bonding plate 7 and making an upper bed opening stick by pressure as shown in drawing 8, the plastic tube container shown in drawing 1 is manufactured by removing the stationary plate 6 and the contact bonding plate 7.

[0017]

Thus, when using the obtained plastic tube container, this plastic tube container is soaked in warm water, and is warmed, and internal cosmetics are warmed. By this warming, if the temperature of the above-mentioned cosmetics turns into the optimal temperature (abbreviated 40 \*\*) for use, the optimal temperature display body 4 will become pink from blue, it will turn out that the above-mentioned cosmetics became a proper temperature through the transparent tube-like object 1, seeing this discoloration, and cosmetics will be extruded and used outside.

[0018]

Thus, in this plastic tube container. since discoloration of the above-mentioned optimal temperature display body 4 shows from the outside that the cosmetics in the plastic tube 3 became a proper temperature and the above-mentioned optimal temperature display body 4 moreover touches cosmetics directly -- the temperature to discolor -- the above -- it comes to agree with a proper temperature.

[0019]

Drawing 9 and drawing 10 show other examples of this device. The optimal temperature display body 4 is formed in the shape of a T character, and he is trying to attach the horizontal piece 4a of this T character to the heat seal part of the plastic tube 3 in this example.

[0020]

Drawing 11 shows the example of further others of this device. In this example, the optimal temperature display body 4 is formed cylindrical. In a figure, 4b is a holding piece, is prolonged toward the center from the inner skin of the neck 2, and has adhered the optimal temperature display body 4 of the above-mentioned cylindrical shape to the tip part of these both the holding pieces 4a.

[0021]

The upper bed part of the optimal temperature display body 4 used for the plastic tube container of drawing 1 is fixed to the heat seal part of the plastic tube 3, and it is possible to support the optimal temperature display body 4 firmly in the shape of both \*\*\*\*.

[0022]

[Effect of the Device]

As mentioned above, if according to the plastic tube container of this device a plastic tube container is warmed and contents become a proper temperature when using contents, such as cosmetics, It can know now that the thermal-sensing discoloration field of the above-mentioned

optimal temperature display body changed to a different color tone from the time of ordinary temperature, looked at change of this color tone from the outside via the area pellucida of a plastic tube container, and the above-mentioned contents became a proper temperature. since [ and ] the above-mentioned optimal temperature display body touches contents directly -- the above -- it can know having become a proper temperature correctly and comes to agree with the time of the change time of the color tone of the above-mentioned thermal-sensing discoloration field becoming temperature with proper cosmetics.

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## TECHNICAL FIELD

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### [Industrial Application]

This device is related with the plastic tube container which accommodates the cosmetics which use for a hot treatment agent and depilation waxing compound etc. warming.

[0002]

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## PRIOR ART

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### [Description of the Prior Art]

Generally, the plastic tube container is provided with the plastic tube in which a neck is provided in a one end opening, and the other end opening is blockaded. There are some which accommodated cosmetics, such as a hot treatment agent and depilation waxing compound, in the plastic tube in such a plastic tube container, and use is faced, After soaking a plastic tube container in warm water etc., warming it and making internal cosmetics into a proper temperature by this, extruding and using it outside is performed.

[0003]

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## EFFECT OF THE INVENTION

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### [Effect of the Device]

As mentioned above, if according to the plastic tube container of this device a plastic tube container is warmed and contents become a proper temperature when using contents, such as cosmetics, It can know now that the thermal-sensing discoloration field of the above-mentioned optimal temperature display body changed to a different color tone from the time of ordinary temperature, looked at change of this color tone from the outside via the area pellucida of a plastic tube container, and the above-mentioned contents became a proper temperature. since [ and ] the above-mentioned optimal temperature display body touches contents directly -- the above -- it can know having become a proper temperature correctly and comes to agree with the time of the change time of the color tone of the above-mentioned thermal-sensing discoloration field becoming temperature with proper cosmetics.

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**TECHNICAL PROBLEM**

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**[Problem(s) to be Solved by the Device]**

However, in soaking a plastic tube container in warm water etc. and warming it as mentioned above, the temperature of warm water, and warming -- since it cannot be known from the outside whether warming of internal cosmetics became various and internal cosmetics moreover became a proper temperature by time etc., there is a problem that it is difficult to use internal cosmetics, making them into a proper temperature. For this reason, as shown in drawing 12, what stuck the display label 10 in which printing in temperature-sensing-and-color-changing-property ink was performed is proposed, and it is partly used for the outside surface of the plastic tube 3. In this case, if a plastic tube container is soaked in warm water, and is warmed when using it and printing of the above-mentioned display label 10 discolors, it is performed that internal cosmetics use it as what became a proper temperature. In a figure, it is the cap which a neck puts 1 on a tube-like object, and 2 is put on it, and is put on the above-mentioned neck 2 5. However, since the temperature of the outside surface of the plastic tube 3 differs from the temperature of internal cosmetics in a plastic tube container, with the display label 10 stuck on the outside surface of the plastic tube 3, temperature of internal cosmetics cannot usually be known correctly. For this reason, it was at the discoloration time of printing of the above-mentioned display label 10, even if it used cosmetics, cosmetics did not become a proper temperature, but the problem that it is difficult to use it for a proper temperature, carrying out still remains.

**[0004]**

This device sets offer of a plastic tube container which can know correctly that it was made in view of such a situation, and contents, such as cosmetics, became a proper temperature as that purpose.

**[0005]**

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**MEANS**

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**[Means for Solving the Problem]**

In order to attain the above-mentioned purpose, a plastic tube container of this device is provided with an optimal temperature display body by which at least a part was allocated in a plastic tube formed in area pellucida, and its tube, and takes composition that at least a part of above-mentioned optimal temperature display body is formed in a thermal-sensing discoloration field.

**[0006]**

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**OPERATION**

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**[Function]**

That is, the plastic tube container of this device is allocating the optimal temperature display body by which at least the part was formed in the thermal-sensing discoloration field in the inside of the plastic tube in which at least the part was formed in the area pellucida. For this

reason, if a plastic tube container is warmed and contents become a proper temperature when using contents, such as cosmetics, it gets to know that the thermal-sensing discoloration field of the above-mentioned optimal temperature display body changed to a different color tone from the time of ordinary temperature, looked at change of this color tone from the outside via the area pellucida of a plastic tube container, and the above-mentioned contents became a proper temperature -- it comes to be able to carry out things since [ and ] the above-mentioned optimal temperature display body touches contents directly -- the above -- it can know having become a proper temperature correctly and comes to agree with the time of the change time of the color tone of the above-mentioned thermal-sensing discoloration field becoming temperature with proper cosmetics.

[0007]

Below, this device is explained in detail.

[0008]

The plastic tube container of this device is provided with the plastic tube in which at least the part was formed in the area pellucida, and the optimal temperature display body allocated in that tube.

[0009]

A neck is formed in the one end opening of a tube-like object, it is blockaded with heat sealing and the above-mentioned plastic tube is constituted, after the other end opening has doubled inner skin. The plastic material which has flexibility is used as a material of the above-mentioned plastic tube, and low density polyethylene, \*\*\*\*\* polyethylene, etc. are specifically raised. opening a hole in some of methods of forming the whole tube-like object transparently by forming a tube-like object in some above-mentioned plastic tubes, using a transparent plastic material as a method of forming the area pellucida, and tube-like objects -- this hole -- a transparent plastic material -- liquid -- the method of covering densely, etc. are raised.

[0010]

The plastic material etc. which have the same flexibility as the above as an optimal temperature display body allocated in the above-mentioned plastic tube are used.

[0011]

A thermal-sensing discoloration field is formed in at least a part of above-mentioned optimal temperature display body. This thermal-sensing discoloration field is formed using thermochromism ink. As this thermochromism ink, by reaching prescribed temperature by warming, it is a color in which contrast with contents (for example, cosmetics, such as hot treatment agent and depilation wax material) carries out the phanerosis vividly, and the thermochromism ink which disappears at ordinary temperature, especially reversible thermochromism ink are used. A publicly known article can be conventionally used for such thermochromism ink as it is. For example, the thing containing the thermochromism coloring matter which is metallic complexes, such as  $\text{AgHgI}$ ,  $\text{Cu}_2\text{HgI}_4$ , and  $\text{HgI}_2$ , and will be discolored if it becomes an elevated temperature and an electron-donating coloring compound (a color is determined)

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which the color will disappear or discolor if it discolors and returns to ordinary temperature again by heating to prescribed temperature.

[0012]

As a method of forming a thermal-sensing discoloration field in the above-mentioned optimal temperature display body, How to form a thermal-sensing discoloration field in the whole optimal temperature display body by forming an optimal temperature display body simultaneously, when fabricating a neck by an injection molding using the resin which scoured thermochromism ink, All or the method of printing temperature-sensing-and-color-changing-property ink in part of the method of forming a thermal-sensing discoloration field in the whole and optimal temperature display bodies, etc. is raised by forming an optimal temperature display body using the resin which scoured thermochromism ink.

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As a method of fixing the above-mentioned optimal temperature display body in a plastic tube, When preparing what carried out integral moulding of the optimal temperature display body to the neck and heat sealing the method of carrying out heat adhesion of this neck at a tube-like object, the method of using adhesives for a neck and pasting up an optimal temperature display body on it, and the upper bed opening of a plastic tube, The method of besides heat sealing on both sides of an optimal temperature display body between the inner skin of an end opening, etc. are raised.

[0014]

Below, an example is described.

[0015]

Drawing 1 shows one example of the plastic tube container of this device. The plastic tube 3 of this plastic tube container forms the neck 2 in the lower end opening part of the tube-like object 1 which consists of transparent low density polyethylene, and is blockaded and constituted by heat sealing an upper bed opening, where inner skin is doubled. And the optimal temperature display body 4 is really formed in the above-mentioned neck 2, and thereby, as shown in drawing 2, the colorless optimal temperature display body 4 is allocated in the above-mentioned plastic tube 3.

[0016]

The above-mentioned plastic tube container is manufactured as follows, for example. That is, as melting temperature shows drawing 3 first using transparent low density polyethylene at 110 \*\*, extrusion molding of the tube-like object 1 is carried out. On the other hand, using the resin which scoured thermochromism ink (the chromic color 45 by a Matsui coloring matter chemical industry company, the heat fading temperature of 40 \*\*), as shown in drawing 4, it fabricates to the neck 2, the tabular optimal temperature display body 4, and one by an injection molding. And as drawing 5 and drawing 5 are shown in drawing 6 which is the figure seen from the top, heat adhesion of the above-mentioned neck 2 is carried out at the lower end opening part of the above-mentioned tube-like object 1, the cap 5 is put on this neck 2, and that opening is blockaded. An inside is filled up with cosmetics, such as a hot treatment agent, from the upper bed opening of the tube-like object 1 after it. In this state, as shown in drawing 7, the inner skin of the upper bed opening of the tube-like object 1 is doubled, the stationary plate 6 is attached, and melting of the upper bed of the tube-like object 1 is heated and carried out to 140 \*\* with the nichrome heater heated by 450-550 \*\*. And after attaching the contact bonding plate 7 and making an upper bed opening stick by pressure as shown in drawing 8, the plastic tube container shown in drawing 1 is manufactured by removing the stationary plate 6 and the contact bonding plate 7.

[0017]

Thus, when using the obtained plastic tube container, this plastic tube container is soaked in warm water, and is warmed, and internal cosmetics are warmed. By this warming, if the temperature of the above-mentioned cosmetics turns into the optimal temperature (abbreviated 40 \*\*) for use, the optimal temperature display body 4 will become pink from blue, it will turn out that the above-mentioned cosmetics became a proper temperature through the transparent tube-like object 1, seeing this discoloration, and cosmetics will be extruded and used outside.

[0018]

Thus, in this plastic tube container. since discoloration of the above-mentioned optimal temperature display body 4 shows from the outside that the cosmetics in the plastic tube 3 became a proper temperature and the above-mentioned optimal temperature display body 4 moreover touches cosmetics directly -- the temperature to discolor -- the above -- it comes to agree with a proper temperature.

[0019]

Drawing 9 and drawing 10 show other examples of this device. The optimal temperature display body 4 is formed in the shape of a T character, and he is trying to attach the horizontal piece 4a of this T character to the heat seal part of the plastic tube 3 in this example.

[0020]

Drawing 11 shows the example of further others of this device. In this example, the optimal temperature display body 4 is formed cylindrical. In a figure, 4b is a holding piece, is prolonged toward the center from the inner skin of the neck 2, and has adhered the optimal temperature display body 4 of the above-mentioned cylindrical shape to the tip part of these both the holding pieces 4a.

[0021]

The upper bed part of the optimal temperature display body 4 used for the plastic tube container of drawing 1 is fixed to the heat seal part of the plastic tube 3, and it is possible to support the optimal temperature display body 4 firmly in the shape of both \*\*\*\*.

[0022]

## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is an explanatory view showing one example of the plastic tube container of this device.

[Drawing 2] It is a sectional view of the important section of the above-mentioned plastic tube container.

[Drawing 3] It is an explanatory view of the manufacturing process of the above-mentioned plastic tube container.

[Drawing 4] An optimal temperature display body is a perspective view of the neck really formed.

[Drawing 5] It is an explanatory view of the manufacturing process of the above-mentioned plastic tube container.

[Drawing 6] It is an explanatory view showing the state where the plastic tube was seen from the top.

[Drawing 7] It is an explanatory view of the manufacturing process of the above-mentioned plastic tube container.

[Drawing 8] It is an explanatory view of the manufacturing process of the above-mentioned plastic tube container.

[Drawing 9] It is an explanatory view showing other examples of this device.

[Drawing 10] It is a sectional view of the important section of an example besides the above.

[Drawing 11] It is an explanatory view showing the example of further others of this device.

[Drawing 12] It is an explanatory view showing a conventional example.

[Description of Notations]

1 Tube-like object

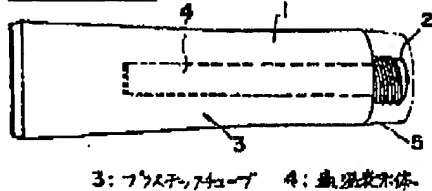
2 Neck

3 Plastic tube

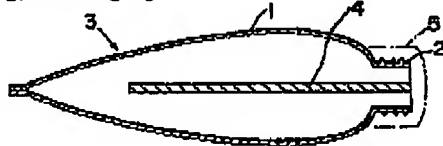
4 Optimal temperature display body

## DRAWINGS

[Drawing 1]



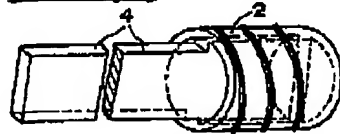
[Drawing 2]



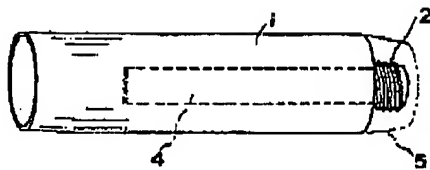
[Drawing 3]



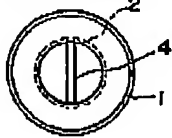
[Drawing 4]



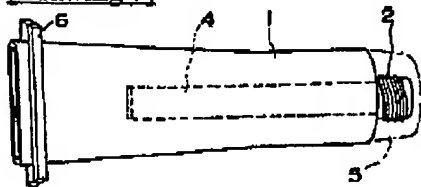
[Drawing 5]



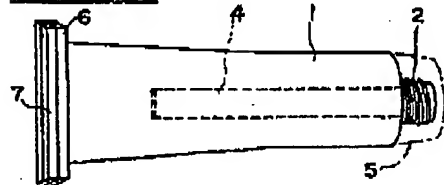
[Drawing 6]



[Drawing 7]



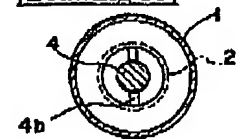
[Drawing 8]



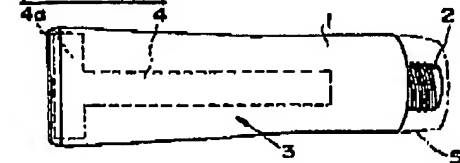
[Drawing 10]



[Drawing 11]



[Drawing 9]



[Drawing 12]

